

2012 ANNUAL REPORT POLLUTION PREVENTION INTERN PROGRAM

Pollution Prevention Services provides confidential, non-regulatory technical assistance to business and industry; working with plant managers to identify and implement environmental improvement projects, leading to more efficient use of resources and economic savings.

Through the intern program, upper-level engineering and environmental science students from Iowa colleges and universities provide host companies with a designated resource to analyze processes, research alternatives, evaluate efficiencies, document savings and provide implementation support of environmental projects.

Since 2001, more than 155 dedicated companies have saved more than \$69 million by opening their doors to pollution prevention interns. Iowa's top students have gained irreplaceable experience leading to employment in their chosen fields – often in our own state.

Businesses that partner with the Pollution Prevention Intern Program are as varied as the projects summarized in this report. Collectively, they repeatedly demonstrate that investing in environmentally sustainable projects provides lasting economic benefits.

We thank the 2012 host companies for their partnership and continued pursuit of environmental excellence.

PROJECT AREAS IMPLMENTED

- Lighting retrofits
- Boiler efficiency
- Heating and ventilation effectiveness
- Air conditioning usage
- Air compressor efficiency
- Water usage and wastewater treatment
- Interior and exterior thermographic analysis
- Solid waste reduction and management
- Process improvements
- Repacing hazardous chemical with less toxic alternatives



2012 IMPLEMENTED SAVINGS

CATEGORY	REDUCTION	COST SAVINGS
WATER CONSERVATION	61,447,839 GALLONS	\$144,510
SOLID WASTE	2,483 TONS	\$142,551
HAZARDOUS WASTE	16,170 GALLONS	\$62,400
ENERGY	4,483,361 KWH 279,631 THERMS	\$351,037 \$153,466
OTHER	—	\$237,795
		TOTAL: \$1,091,759

CONVENTIONAL AIR POLLUTANTS AND GREENHOUSE GASES DIVERTED IN STANDARD TONS

Total for all sectors							
CO ₂	SO ₂	CH ₄	N ₂ O	CFC	NOX	VOC	PM-10
50,276.52	102.93	9,169.16	3,612.88	377.91	47.83	17.31	4.04

The progress of the project has exceeded our expectations and we will easily meet our goals and objectives.

KATY VENARD
HY-LINE INTERNATIONAL

Hy-Vee Distribution Center has hosted three interns through the Pollution Prevention Intern Program and each time we have had success stories that have went on to help in the reduction of expenditures for us and energy savings or reduced waste for the environment.

JOHN LAING
HY-VEE DISTRIBUTION

The program provides valuable insight for the organization while allowing a student to exercise his/her knowledge.

CHERYL LOUNSBERRY
IOWA HEALTH – DES MOINES



Full case summaries may be viewed at:
www.iowap2interns.com

THE IOWA DEPARTMENT OF NATURAL RESOURCES





SUMMARY OF 2012 PROJECTS



BENJAMIN KLAUS
EnvE, THE UNIVERSITY
OF IOWA

3M COMPANY KNOXVILLE, IA

3M produces various types of tapes and adhesives used in commercial, industrial and consumer applications. The intern conducted a waste stream analysis to identify areas of opportunity to reduce waste generation and increase recycling. He researched alternative strategies for managing five specialized waste streams and developed a waste management plan for the special waste.



JAKE BRENNEMAN
ME, IOWA STATE
UNIVERSITY

DUPONT PIONEER JOHNSTON, IA

DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics. During the 24-week project, the intern explored the feasibility of installing a corn boiler to incinerate discard corn seed and provide heat for its operations. Equipment purchases, process changes and project site layouts were developed in collaboration with Pioneer leadership. Implementation of a corn boiler also mitigates risk in the handling of regulated seed and unpredictable disposal fees.



JOHN DONAHOE
ME, IOWA STATE
UNIVERSITY

EAGLE WINDOW AND DOOR DUBUQUE, IA

Eagle Window & Door, an Andersen Corporation, manufactures a complete line of high-quality, aluminum-clad windows and doors. The intern investigated ways to improve the efficiency and performance of the compressed air system and developed a multi-phase implementation plan to reduce the company's total energy usage, costs and environmental impacts.



WESLEY HUTTER
ME, IOWA STATE
UNIVERSITY

GOLDEN CRISP PREMIUM FOODS, INC SIOUX CENTER, IA

Golden Crisp Premium Foods, Inc., a branch of Patrick Cudahy, produces cooked bacon at its Sioux Center plant. An energy assessment was conducted to identify opportunities to improve the efficiency of processing systems and reduce utility costs. After determining a baseline, the intern quantified economic and environmental savings for recommended improvements.



NICHOLAS JAEGER
ChE, IOWA STATE
UNIVERSITY

GREEN PLAINS HOLDINGS II, LLC

LAKOTA, IA

Green Plains Holdings II, LLC is an ethanol production facility in northern Iowa. In addition to ethanol, the facility markets dry, wet and modified distillers grains, corn oil and syrup. The intern conducted a water balance and investigated water reduction and reuse opportunities in the production processes.



DARREN YOUNGS
ChE, THE UNIVERSITY
OF IOWA

GREEN PLAINS SUPERIOR, LLC

SUPERIOR, IA

Green Plains Superior, LLC is a dry-grind ethanol production facility. Fermentation co-products are also refined and sold as non-food grade dried distillers grains, wet distillers grains, syrup and corn oil. The intern compared the feasibility of nozzle centrifugation and microfiltration processes for removal of suspended solids to increase process efficiency.



LISA GARRETT
ME, IOWA STATE
UNIVERSITY

GRINNELL COLLEGE

GRINNELL, IA

Grinnell College is a private liberal arts college. Enrollment includes students from all states and about 50 countries. The intern evaluated options to improve the operating efficiency of the campus boilers. Recommendations included installation of economizers and variable frequency drives on the blowers to reduce energy usage and associated costs.



DAN JENSEN
EnvE, IOWA STATE
UNIVERSITY

HY-LINE INTERNATIONAL

DALLAS CENTER, IA

Hy-Line International is a poultry company that specializes in genetic breeding stock. In this 24-week project, the intern evaluated current organic waste management practices and researched alternative solutions to minimize costs and produce environmental benefits. The intern's research was primarily focused on anaerobic digestion and composting technologies.



CHRISTOPHER BONDI
ME, THE UNIVERSITY
OF IOWA

HY-VEE DISTRIBUTION CENTER

CHARITON, IA

Hy-Vee operates more than 235 supermarkets in eight states. The main distribution center at Chariton houses three warehouses, office space, a print shop and a truck maintenance shop. The intern conducted an audit of the dry goods building and made recommendations to reduce energy usage and associated costs.



PETER ERNZEN
ME, THE UNIVERSITY
OF IOWA

INFASTECH™

DECORAH, IA

Infastech™ produces fasteners of all shapes and sizes that are used in diverse applications, from cars and construction equipment to cell phones. The intern conducted an analysis of the exhaust gas to determine the amount of recoverable power from furnaces. He then designed a heat exchanger to recover the power and evaluated installation methods to avoid adverse affects on furnace operation.



EBENEZER CHELLIAH
ChE, IOWA STATE
UNIVERSITY

IOWA HEALTH – DES MOINES

DES MOINES, IA

Iowa Health - Des Moines is the parent of four hospitals: Iowa Methodist Medical Center, Iowa Lutheran Hospital, Blank Children's Hospital and Methodist West Hospital. The intern conducted a waste stream analysis and developed strategies to reduce waste generation and improve waste management practices. The intern focused on organic waste management and confidential paper shredding.



CODY BURBACH
ME, IOWA STATE
UNIVERSITY

JBS USA

MARSHALLTOWN, IA

JBS' Marshalltown facility is the third largest pork processing facility in the United States. The intern updated the piping and instrumentation diagrams for the refrigeration system. The diagrams will facilitate quick tracking of trouble spots and provide the first step of a complete assessment. A number of leaks were also identified for repair during the pipe tracing process.



PARKER WELLS
ME, IOWA STATE
UNIVERSITY

JELD-WEN DOOR SYSTEMS

GRINNELL, IA

JELD-WEN Door Systems is a manufacturer of interior doors, pre-hung doors, and exterior doors. The intern conducted a comprehensive assessment of the compressed air system. Considerations for optimizing the efficiency of the system included leak repair, an on-going maintenance plan, end use applications, storage capacity and peak demand loading.



CHELSEA TOMEK
IE, IOWA STATE
UNIVERSITY

KUM & GO

WEST DES MOINES, IA

Kum & Go is the fifth largest privately held, company-operated convenience store chain in the United States. The intern used data collected from waste sort exercises to pinpoint opportunities to divert waste from Iowa landfills and optimize the company's waste management practices.



DANIEL NEWKIRK
ME, IOWA STATE
UNIVERSITY

MERCY MEDICAL CENTER

DES MOINES, IA

Mercy Medical Center is an acute-care health facility located on three campuses in Des Moines. The intern evaluated efficiency opportunities in the facility's heating, ventilation and air conditioning system. He investigated the feasibility of utilizing free cooling methodologies, then provided recommendations for upgrades to the air-handling units, steam and water systems. Several of the recommendations will also help reduce peak demand and associated utility costs.



VISHNU BONGUNURI
ME, BRADLEY
UNIVERSITY,
PEORIA, IL

THE NEBRASKA MEDICAL CENTER

Omaha, NE

The Nebraska Medical Center is recognized as a world leader for oncology, neurology, cardiology, organ and bone marrow transplants. The intern provided an assessment of steam generation and distribution in two major buildings on the medical center campus. Recommendations to upgrade insulation, repair failing steam traps, install economizers on the boilers and recover heat from air compressors will help to optimize efficiency and reduce utility costs.



JUSTIN MCANINCH
ME, THE UNIVERSITY
OF IOWA

PROCTER AND GAMBLE

IOWA CITY, IA

Procter & Gamble is the world's top manufacturer of household consumer products. Shampoos, conditioners, mouthwash and body washes are produced at the Iowa City plant. Over 24 weeks, the intern collected data and researched technologies to capture, transfer and store heat energy and identified inefficiencies in the steam trap system. He also recommended improvements to optimize the efficiency of the boilers.



BRANDON HUTH
ChE, IOWA STATE
UNIVERSITY

ROSENBOOM MACHINE AND TOOL

SHELDON AND SPIRIT LAKE, IA

Rosenboom Machine & Tool, Inc. manufactures custom hydraulic cylinders for a variety of markets. During this 24-week project, the intern conducted a waste audit at the Sheldon and Spirit Lake facilities. After identifying the key contributors, the intern researched solutions to reduce the amount of waste generated and to increase the marketability of the production scrap.



JOHN SKUBIC
ChE, IOWA STATE
UNIVERSITY

WEST LIBERTY FOODS

WEST LIBERTY, IA

In addition to harvesting and processing turkeys, West Liberty Foods processes all types of cooked, processed and ready-to-eat meat products. The intern conducted a water balance to identify opportunities for reducing water usage and appropriate areas for integrating reuse technologies. Recommendations included process modifications, enhanced maintenance procedures and scheduling strategies.

Danielle Dilks, Intern Program Coordinator Pollution Prevention Services

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